

Claims

What is claimed is:

- 1 1. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter comprising:
3 a photodetector for providing a modulated current;
4 a transimpedance amplifier coupled to said photodetector receiving
5 said modulated current and providing an output voltage signal;
6 an output buffer coupled to said transimpedance amplifier receiving
7 said output voltage signal; and
8 said output buffer including a differential transistor pair; said
9 transimpedance amplifier output voltage signal applied to said differential
10 transistor pair; a pair of source degeneration resistors connected to said
11 differential transistor pair; and a capacitor coupled between connections of
12 said differential transistor pair and said source degeneration resistors; said
13 capacitor having a selected value for reducing detector jitter.
- 1 2. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 wherein said
3 differential transistor pair is a high gain amplifier and is responsive to said
4 applied transimpedance amplifier output voltage signal for accentuating high
5 slew rates over lower slew rates.
- 1 3. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 wherein said
3 capacitor passes high slew rate transimpedance amplifier output voltage
4 signals and limits low slew rate transimpedance amplifier output voltage
5 signals.
- 1 4. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 wherein said
3 photodetector includes a lateral photodetector structure.
- 1 5. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 includes a current
3 source and a current sink for biasing said photodetector.

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1 6. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 wherein said
3 transimpedance amplifier output voltage signal applied to said differential
4 transistor pair is a differential output voltage signal and said output buffer
5 providing a differential detector voltage signal.

1 7. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 wherein said pair
3 of source degeneration resistors connected to said differential transistor pair
4 control gain of said differential transistor pair.

1 8. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 wherein said
3 output buffer includes a pair of drain load resistors connected between said
4 differential transistor pair and a high power supply voltage.

1 9. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 wherein said
3 differential transistor pair is formed by a pair of metal semiconductor field
4 effect transistors (MESFETs).

1 10. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 1 further includes
3 AC coupling capacitors coupled between said photodetector and said
4 transimpedance amplifier.

1 11. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter comprising:

3 a lateral photodetector biased by a current source and a current sink
4 for providing a modulated current signal;

5 a transimpedance amplifier coupled to said lateral photodetector
6 receiving said modulated current signal and providing a differential output
7 voltage signal;

8 an output buffer coupled to said transimpedance amplifier receiving
9 said differential output voltage signal; and

10 said output buffer including a differential transistor pair; said
11 differential output voltage signal of said transimpedance amplifier applied to
12 said differential transistor pair; a pair of source degeneration resistors
13 connected to said differential transistor pair; and a capacitor coupled
14 between connections of said differential transistor pair and said source
15 degeneration resistors; said capacitor having a selected value to reduce
16 detector jitter; and said capacitor passing high slew rate signals and limiting
17 low slew rate signals.

1 12. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 11 wherein said
3 differential transistor pair is a high gain amplifier and is responsive to said
4 applied differential output voltage signal for accentuating high slew rates
5 over lower slew rates.

1 13. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 11 wherein said
3 output buffer includes a pair of drain load resistors connected between said
4 differential transistor pair and a high power supply voltage.

1 14. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 11 wherein said
3 output buffer includes a current source connected between said pair of
4 source degeneration resistors and ground.

1 15. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 11 wherein said
3 differential transistor pair is formed by a pair of high gain metal
4 semiconductor field effect transistors (MESFETs).

1 16. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 11 wherein said
3 output buffer includes a unity gain source follower amplifier coupled to said
4 differential transistor pair.

1 17. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 11 wherein said
3 output buffer includes a current reference source and a current source
4 coupled to said current reference source and connected between said pair of
5 source degeneration resistors and ground.

1 18. A detector for short wave fiber optic communications having
2 compensation to reduce detector jitter as recited in claim 11 includes AC
3 coupling capacitors coupled between said lateral photodetector and said
4 transimpedance amplifier; said AC coupling capacitors for passing
5 predefined frequency modulated current signals and blocking low frequency
6 modulated current signals.

1 19. A buffer circuit for a signal detector having
2 compensation to reduce detector jitter comprising:
3 a differential transistor pair;
4 a voltage signal applied to said differential transistor pair;
5 a pair of source degeneration resistors connected to said differential
6 transistor pair; and
7 a capacitor coupled between connections of said differential transistor
8 pair and said source degeneration resistors; said capacitor having a selected
9 value for reducing detector jitter.

1 20. A buffer circuit for a signal detector having compensation to
2 reduce detector jitter as recited in claim 19 wherein said differential transistor
3 pair is formed by a pair of high gain metal semiconductor field effect
4 transistors (MESFETs).